

CONDORS AND LEAD

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SAAMI

CALIFORNIA CONDOR

- One of North America's largest birds
- Scavenger of megafauna
- Cannot smell – finds carcasses by sight
- Soaring flight
 - Airborne for 4 hours in winter, 6 hours in summer

CA CONDOR RANGE

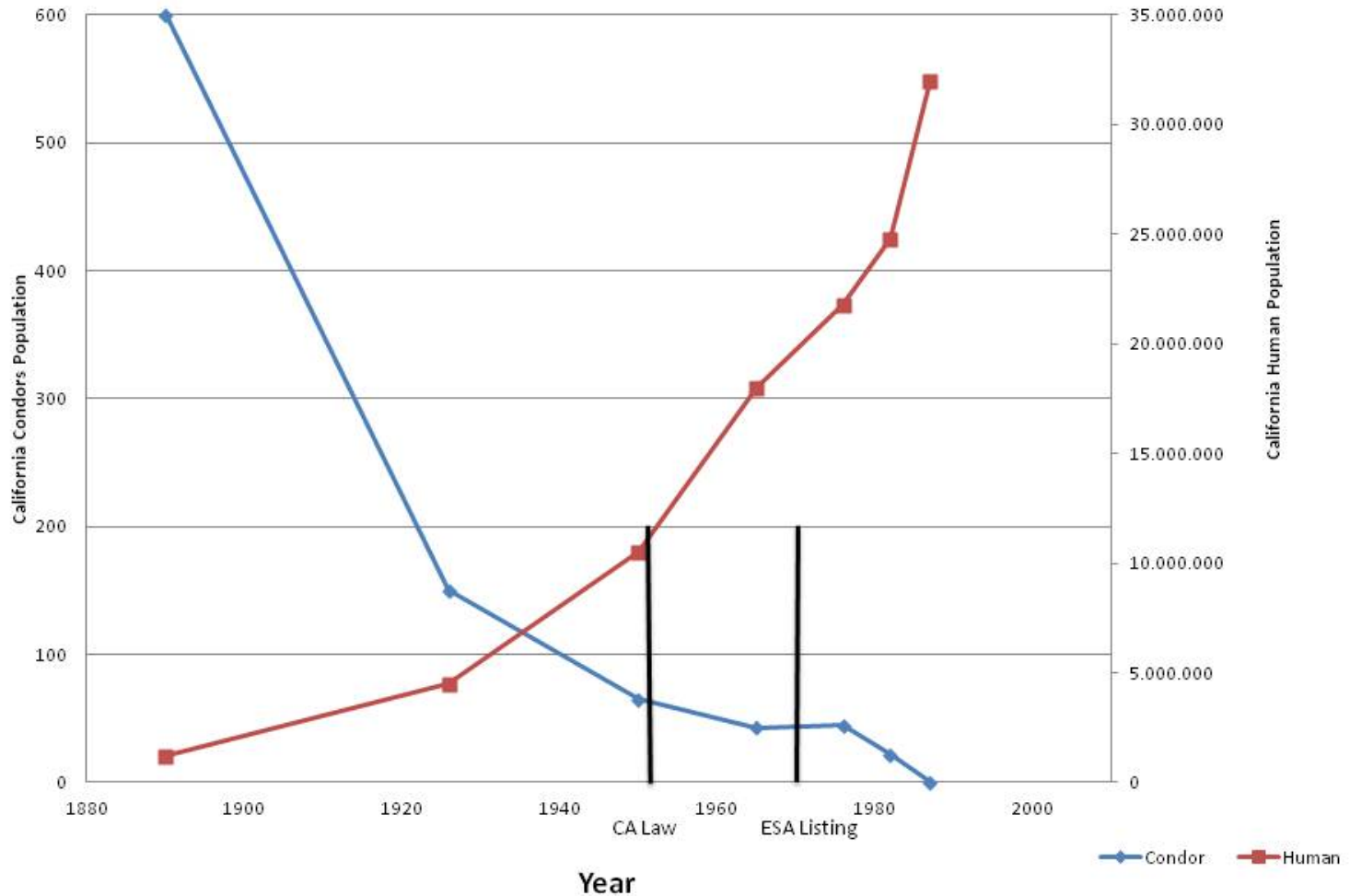
- Pleistocene
 - Florida to New York in the east and Canada to Mexico in the west
- After the Ice Age
 - West coast
- Mid-1800's
 - Southern California rangelands

RANGE FOLLOWED FOOD SUPPLY

- Pleistocene
 - Wooley Mammoths and giant ground sloths roamed North America
- After the Ice Age
 - Whale carcasses washed ashore
- Mid to late 1800's
 - Livestock
- Tomorrow?????

Condor Population Graph

California Condor Population vs California Human Population



CAUSES OF MORTALITY

1800's to 1980's

- Scientific and Hobby Collecting
 - Strong correlation with declines
- Strychnine and Cyanide Poisoning
- Wanton Shooting
- Ceremonial Sacrifice
- Other causes evaluated but dismissed

LEAD AS A CONDOR MORTALITY CONCERN

- Lead poisoning of wildlife has been discussed since the 1800's
- Mortality of Condors from poisoned livestock carcasses had been well-documented
- Lead poisoning of Condors wasn't even mentioned until 1986

CONDOR RECOVERY TEAM

(CRT)

- Population of wild Condors continued to decline through the 1980's
- Battle within the CRT over future direction of recovery efforts
- Call to remove all Condors from the wild
- Opposed by FWS and Audubon

EMERGENCE OF LEAD AS A CONDOR CONCERN

- In 1986 lead ammunition went from not even being a Condor mortality factor to being THE factor
- Risk of lead poisoning became the justification for removal of all Condors from the wild
- There was no tangible evidence
- Reintroduction commenced in 1992

LEAD AND CONDORS

- Fatal Blood Lead Level (BLL) is unknown
 - 101 $\mu\text{g}/\text{dL}$ has been labelled “lead poisoning mortality” while Condors with 600 $\mu\text{g}/\text{dL}$ have survived
- Half-life in Condors is 9 days (+/- 6 days)
- CRT established a threshold for chelation based on US guidelines for children

LINKING LEAD IN CONDORS WITH AMMUNITION

ISOTOPE RATIO STUDY

- Isotope ratios used by US DOJ to convict (link suspect's ammo to crime scene)
 - Later debunked – prisoners released
- ALL metallic lead would match (solder, wheel weights, costume jewelry, etc.)
- Only metallic lead source tested was ammunition
- Study concluded it had to be ammunition

LINKING LEAD IN CONDORS WITH AMMUNITION

ISOTOPE RATIO STUDY

- Unexplained anomalies
 - ng/mL vs. $\mu\text{g/dL}$
 - Uses ratio analysis of 207/206 vs. 206/207

BEYOND THE CONDOR

Bald Eagles

National bird

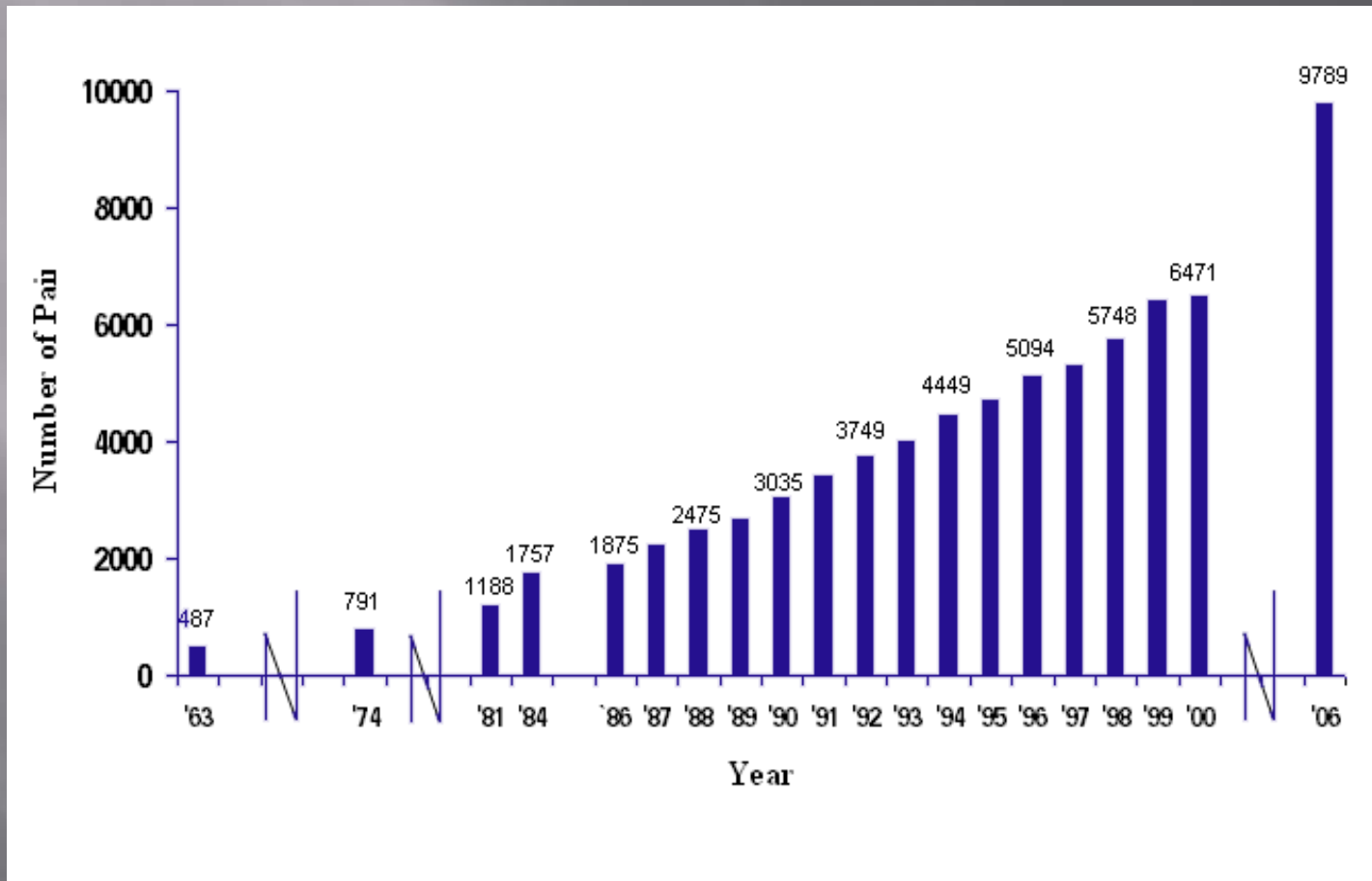
Powerful visual

Bald Eagle Protection Act

No population threat

MN Raptor Center – member of CRT

Chart of Bald Eagle Breeding Pairs in Lower 48 States



BEYOND THE CONDOR

Human Health

"Study" in North Dakota

People eating game meat had a slightly higher BLL than hand-picked "control"

Actually had BLL less than half the US avg.

Launched by a dermatologist – member of the Board of Directors of Peregrine Fund

BEYOND THE CONDOR

Human Health

Iowa Dept of Health studied lead in children for decades – no link

US CDC ran a study similar to the North Dakota "study" using valid scientific principles – no link

Fear-based strategy

CALIFORNIA LEAD BANS

2008 in Condor territory

2015 statewide

- 99% compliance with 2008 law
- Zero change in Condor lead levels
 - CRT deliberately withheld this data until after 2015 law was passed

CONDORS AND WILDLIFE

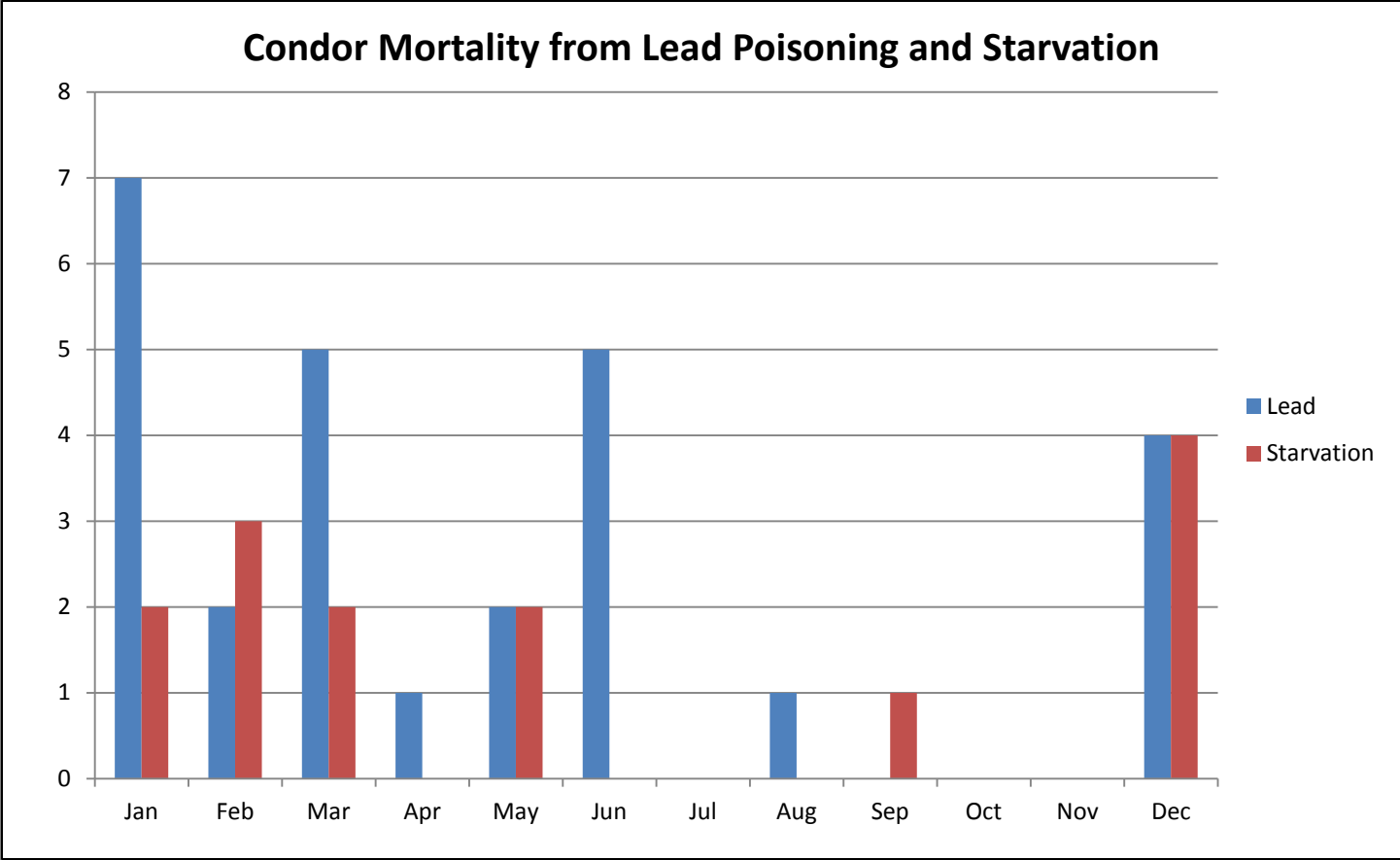
CA big game harvest peaked in 1952

Wounded wildlife seeks heavy cover

Gut piles are gone in hours

Researchers prior to reintroduction did not identify wildlife as a major food source

CONDOR MORTALITY BY MONTH



REPRODUCTION

Low nesting success

DDT

High chick mortality

Genetic abnormalities

West Nile Virus

"Microtrash"

Study – Reproduction is "nil" without intense human intervention

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CONCLUSIONS

Even if lead is eliminated, the Condor cannot survive in the wild

Food is severely limited

Habitat is severely limited

Natural reproduction is nonexistent

\$5 million/year for a zoo without walls

THANK YOU!